## IN THE CLAIMS

The following listing of the claims is provided in accordance with 37 C.F.R. §1.121.

1.    (original)    A method of creating and displaying images resulting from digital tomosynthesis performed on a subject using a flat panel detector comprising the steps of:

acquiring a series of x-ray images of the subject, the x-ray images being acquired at two or more different angles relative to the subject;

applying a first set of corrective measures to the series of images;

reconstructing the series of images into a series of at least one slice through the subject;

applying a second set of corrective measures to the slice; and

displaying the images or slice according to at least one of a plurality of display options.

2.    (original)    The method of claim 1, wherein the first set of corrective measures includes at least one of detector correction, intensity correction, scatter correction, geometric correction, motion correction, material decomposition, noise reduction, and filtration.

3.    (original)    The method of claim 1, wherein the second set of corrective measures includes at least one of filtering, motion correction, noise reduction, presentation processing, and material decomposition.

4.    (original)    The method of claim 1, wherein the display options allow for at least one of a selection of the region of interest, segmentation, formatting of the

images, rendering and creation of a three-dimensional display, and creation of a two-dimensional display.

5.    (original)    The method of claim 4, wherein the step of displaying the images or slice according to at least one of a plurality of display options comprises the step of displaying one or more of the images in a two-dimensional display.

6.    (original)    The method of claim 4, wherein the step of displaying the images or slice according to at least one of a plurality of display options comprises the step of displaying one or more of the images in a three-dimensional display.

7.    (original)    The method of claim 1, further comprising the step of applying computer assisted processing and diagnosis algorithms to data represented by the images or slice.

8.    (original)    The method of claim 1, further comprising the step of archiving data represented by the images or slice.

9.    (original)    The method of claim 1, wherein the step of acquiring a series of x-ray images of the subject is performed before the step of reconstructing the series of images into a series of at least one slice through the subject.

10.    (original)    The method of claim 1, wherein the step of acquiring a series of x-ray images further comprises the steps of:

receiving inputs relating to options for acquiring x-ray images of the subject, the options allowing for the selection of at least one of a field of view, a method of controlling the dose of the x-rays, an energy level or levels at which the images will be acquired, how a source and a detector will move while the images are acquired, whether a

large field of view is desired, acquisition paths of the source and the detector, and characteristics of the slice to be constructed from the x-ray images;

acquiring a single x-ray image of the subject;

adjusting parameters related to the acquisition of x-ray images, the parameters including at least one of x-ray technique parameters, filtration techniques, position of acquisition, and angle of the acquisition; and

continuing to acquire a single x-ray image and to then adjust the acquisition parameters until a sufficient number of images have been acquired.


11.    (original)    The method of claim 10, wherein at least one of the parameters related to the acquisition of the x-ray images is adjusted based on information provided by a previously acquired image.


12.    (original)    The method of claim 10, wherein the step of acquiring a series of x-ray images further comprises the steps of:

acquiring an initial x-ray image to of the subject; and

detecting at least one physiological signal from the subject and using the physiological signal as a basis for one of triggering the acquisition of subsequent x-ray images and processing the x-ray images after they have been acquired.


13.    (original)    The method of claim 1, wherein the step of reconstructing the series of images into a series of at least one slice through the subject further comprises the step of applying a reconstruction algorithm to the data represented by the series of x-ray images, the reconstruction of the at least one slice being optionally based on historical information relating to at least one of the physical condition of the subject , the pathological condition of the subject, and the acquisition parameters of at least one previous acquisition.

14.    (original)    The method of claim 13, wherein the step of reconstructing the series of images into a series of at least one slice through the subject further comprises the step of applying a deconvolution algorithm to at least one slice, the application of the deconvolution algorithm being optionally based on historical information relating to at least one of the physical condition of the subject , the pathological condition of the subject, and the acquisition parameters of at least one previous acquisition.

15.    (original)    A system for creating and displaying images of the internal structures of a subject resulting from digital tomosynthesis performed with a flat panel digital detector comprising:

a means for acquiring a series of x-ray images of the subject, the x-ray images being acquired at two or more different angles relative to the subject;

a means for applying a first set of corrective measures to the series of images;

a means for reconstructing the series of images into a series of at least one slice through the subject;

a means for applying a second set of corrective measures to the slice; and

a means for displaying the images or slice according to at least one of a plurality of display options.

16.    (original)    The system of claim 15, wherein the first set of corrective measures includes at least one of detector correction, intensity correction, scatter correction, geometric correction, motion correction, material decomposition, noise reduction, and filtration.

17.    (original)    The system of claim 15, wherein the first set of corrective measures includes at least one of detector correction, intensity correction, scatter correction, geometric correction, motion correction, material decomposition, noise reduction, and filtration.

18.     (original)     The system of claim 15, wherein the second set of corrective measures includes at least one of filtering, motion correction, noise reduction, presentation processing, and material decomposition.

19.     (original)     The system of claim 15, wherein the display options allow for at least one of a selection of the region of interest, segmentation, formatting of the images, rendering and creation of a three-dimensional display, and creation of a two-dimensional display.

20.     (original)     The system of claim 15, further comprising the step of applying computer assisted processing and diagnosis algorithms to data represented by the images or slice.

21.     (original)     The system of claim 15, further comprising the step of archiving data represented by the images or slice.

22.-48.   (canceled).

49.     (original)     A method of creating and displaying images resulting from digital tomosynthesis performed on a subject using a flat panel detector comprising the steps of:

acquiring a series of x-ray images of the subject, the x-ray images being acquired at two or more different angles relative to the subject;

applying a set of corrective measures to the series of images;

reconstructing the series of images into a series of at least one slice through the subject; and

displaying the images or slice according to at least one of a plurality of display options.

50.     (original)     The method of claim 49, wherein the first set of corrective measures includes at least one of detector correction, intensity correction, scatter correction, geometric correction, motion correction, material decomposition, noise reduction, and filtration.

51.     (original)     The method of claim 50, wherein the step of reconstructing the series of images into a series of at least one slice through the subject further comprises the step of applying a reconstruction algorithm to the data represented by the series of x-ray images, the reconstruction of the at least one slice being optionally based on historical information relating to at least one of the physical condition of the subject , the pathological condition of the subject, and the acquisition parameters of at least one previous acquisition.

52.     (original)     The method of claim 51, wherein the display options allow for at least one of a selection of the region of interest, segmentation, formatting of the images, rendering and creation of a three-dimensional display, and creation of a two-dimensional display.

53.     (original)     The method of claim 52, wherein the step of acquiring a series of x-ray images further comprises the step of adjusting parameters related to the acquisition of x-ray images between the acquisitions of the x-ray images, the parameters including at least one of x-ray technique parameters, filtration techniques, position of acquisition, and angle of the acquisition.

54.     (original)     The method of claim 53, wherein at least one of the parameters related to the acquisition of the x-ray images is adjusted based on information provided by a previously acquired image.